IN THE CLAIMS:

Please amend the claims as follows:

1. (currently amended) An electron microscope having an electron beam optical system provided with an electron source and a lens for focusing an electron beam, an optical system controller for controlling the electron beam optical system, a specimen stage on which a specimen is to be placed, an electron detector for detecting electrons emitted from the specimen by irradiating the specimen with the electron beam, an X-ray detector for detecting X rays radiated from the specimen, and a processor for processing signals from both the detectors, and performing image formation and elemental analysis of the specimens, said electron microscope comprising:

a database having data including X-ray ~~spectra (~~reference spectra~~)~~ of a plurality of kinds of standard substances and labels containing names of substances corresponding to the respective reference spectra; and

means ~~comprising~~ for performing the steps of:

checking an X-ray ~~spectrum (~~sample spectrum~~)~~ of the specimen against ~~the~~ reference spectra in the database;

calculating a degree of matching in spectral shape between ~~the~~ a sample spectrum and ~~the~~ reference spectra;

extracting a reference spectrum having the highest degree of matching from the database;

setting up a plurality of X-ray energy regions so as to have sensitivity data for X-ray energy of the X-ray detector, and to include peaks of the sample spectrum

when analyzing by identifying a substance of the specimen on the basis of ~~the~~ a label corresponding to the reference spectrum extracted;

standardizing the intensity of the reference spectra into the intensity of the sample spectrum for each of the X-ray energy regions as set up after multiplying the reference spectra by the sensitivity data;

checking the sample spectrum against the reference spectra as standardized and extracting one or a plurality of the reference spectra in descending order of the degree of matching between the sample spectrum and the reference spectra for each of the X-ray energy regions; and

outputting ~~the~~ a label or labels corresponding to the one or the plurality of the reference spectra, degree of matching, and a numerical value used in the standardization.

2. (currently amended) An electron microscope according to claim 1, wherein a function of outputting ~~the~~ a label, ~~the~~ a degree of matching, and ~~the~~ a numerical value used in the standardization outputs a first candidate element, first to second candidate elements, or first to third candidate elements in descending order of the degree of matching.

3. (currently amended) An electron microscope according to claim 1, wherein ~~a~~ the intensity ratio of the sample spectra obtained by electron beam irradiation at not less than two varied acceleration voltages is displayed.

4. (original) An electron microscope according to claim 1, wherein the sensitivity data contain a ratio of an intensity of an X-ray spectrum of a standard specimen including a silicon wafer, obtained at the time of obtaining the reference spectra to an intensity of an X-ray spectrum of the standard specimen, obtained immediately before matching.

5. (currently amended) An electron microscope having an electron beam optical system provided with an electron source and a lens for focusing an electron beam, an optical system controller for controlling the electron beam optical system, a specimen stage on which a specimen is to be placed, an electron detector for detecting electrons emitted from the specimen by irradiating the specimen with the electron beam, an X-ray detector for detecting X rays radiated from the specimen, and a processor for processing signals from both the detectors, and performing image formation and elemental analysis of the specimens, said electron microscope comprising:

a database having data including X-ray ~~spectra (~~reference spectra~~)~~ of a plurality of kinds of standard substances and labels containing names of substances corresponding to the respective reference spectra;

a memory for storing a plurality of X-ray ~~spectra (~~sample spectra~~)~~ at a plurality of observation points on the specimen, respectively, obtained by the X-ray detector;

means ~~of~~ for categorizing the plurality of the sample spectra into one or a plurality of groups of the sample spectra by matching ~~thereof~~ with each other, and

performing elemental analysis of one X-ray spectrum selected from the respective groups.

6. (original) An electron microscope according to claim 5, further comprising a function of matching the sample spectra with each other for each of one or a plurality of X-ray energy regions set up so as to include respective peaks of the sample spectra when executing the matching of the sample spectra with each other.

7. (currently amended) An electron microscope having an electron beam optical system provided with an electron source and a lens for focusing an electron beam, an optical system controller for controlling the electron beam optical system, a specimen stage on which a specimen is to be placed, an electron detector for detecting electrons emitted from the specimen by irradiating the specimen with the electron beam, an X-ray detector for detecting X rays radiated from the specimen, and a processor for processing signals from both the detectors, and performing image formation and elemental analysis of the specimens, said electron microscope comprising:

means ~~of~~ for detecting the count-number of X rays per unit time by detecting the X rays with the X-ray detector; and

feedback-controlling a current quantity of the electron beam on the basis of the count-number of X rays per unit time.

8. (original) An electron microscope according to claim 7, wherein the current quantity of the electron beam is feedback-controlled such that the count-number of X rays from the specimens falls within a range of 1000 to 2000 counts per second.

9. (currently amended) A method of analyzing specimens, using an electron microscope having an electron beam optical system provided with an electron source and a lens for focusing an electron beam, an optical system controller for controlling the electron beam optical system, a specimen stage on which a specimen is to be placed, an electron detector for detecting electrons emitted from the specimen by irradiating the specimen with the electron beam, an X-ray detector for detecting X rays radiated from the specimen, a processor for processing signals from both the detectors, and performing image formation and elemental analysis of the specimens, and a database having data including X-ray ~~spectra (~~reference spectra~~)~~ of a plurality of kinds of standard substances and labels containing names of substances corresponding to the respective reference spectra, said method of analyzing the specimens comprising steps of:

checking an X-ray ~~spectrum (~~sample spectrum~~)~~ of the specimen against the reference spectra in the database;

calculating a degree of matching in spectral shape between ~~the~~ a sample spectrum and ~~the~~ a reference spectra;

extracting a reference spectrum having the highest degree of matching from the database;

setting up a plurality of X-ray energy regions so as to have sensitivity data for X-ray energy of the X-ray detector, and to include peaks of the sample spectrum when analyzing by identifying a substance of the specimen on the basis of ~~the~~ a label corresponding to the reference spectrum extracted;

standardizing the intensity of the reference spectra into the intensity of the sample spectrum for each of the X-ray energy regions as set up after multiplying the reference spectra by the sensitivity data;

checking the sample spectrum against the reference spectra as standardized and extracting one or a plurality of the reference spectra in descending order of the degree of matching between the sample spectrum and the reference spectra for each of the X-ray energy regions; and

outputting ~~the~~ a label or labels corresponding to the one or the plurality of the reference spectra, the degree of matching, and a numerical value used in the standardization.

10. (currently amended) A method of analyzing specimens, using an electron microscope having an electron beam optical system provided with an electron source and a lens for focusing an electron beam, an optical system controller for controlling the electron beam optical system, a specimen stage on which specimens are to be placed, an electron detector for detecting electrons emitted from the specimens by irradiating the specimens with the electron beam, an X-ray detector for detecting X rays radiated from the specimens, a processor for processing signals from both the detectors, and performing image formation and

elemental analysis of the specimens, a database having data including X-ray ~~spectra (~~reference spectra~~)~~ of a plurality of kinds of standard substances and labels containing names of substances corresponding to the respective reference spectra, and a memory for storing a plurality of X-ray ~~spectra (~~sample spectra~~)~~ at a plurality of observation points on the specimens, respectively, obtained by the X-ray detector, said method of analyzing the specimens comprising:

~~means of~~ categorizing the plurality of the sample spectra into one or a plurality of groups of the sample spectra by matching ~~thereof~~ with each other, and performing elemental analysis of one X-ray spectrum selected from the respective groups.

IN THE ABSTRACT OF THE DISCLOSURE:

Please amend the abstract as follows:

ABSTRACT

~~There are provided an~~ An electron microscope including an apparatus ~~of~~ for x-ray analysis, is capable of performing elemental analysis with X-rays emitted from a specimen by electron beam irradiation, that is, inspection of foreign particles, for enhancement of yields in manufacturing ~~semiconductor devices and so forth~~, at high speed and with high precision and high space resolving power~~, and a method of analyzing specimens using the same~~. The ~~electron microscope comprises means of automatically controlling~~ current quantity of the electron beam is automatically controlled such that an X-ray count rate falls within a range of 1000 to 2000 counts per second, ~~means of setting up~~ a plurality of X-ray energy regions are set up when checking an X-ray spectrum against reference spectra stored in a database for analysis of the X-ray spectrum, ~~and performing~~ matching is performed for each of the X-ray energy regions, and ~~means of analyzing~~ the distribution of the elements observed is analyzed on the basis of an intensity ratio between X-ray sample spectra obtained by electron beam irradiation at not less than two varied acceleration voltages~~, respectively~~.

REMARKS

The specification has been amended to correct errors of a typographical and grammatical nature. Due to the large number of corrections thereto, applicants submit herewith a Substitute Specification, along with a marked-up copy of the original specification for the Examiner's convenience. Applicants submit that the substitute specification includes no new matter. Therefore, entry of the Substitute Specification is respectfully requested.

The claims and abstract have also been amended to correct errors of a grammatical nature and to more clearly describe the features of the present invention.

Entry of the preliminary amendments and examination of the application is respectfully requested.

To the extent necessary, applicant's petition for an extension of time under 37 CFR 1.136. Please charge any shortage in the fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 01-2135 (501.42867X00) and please credit any excess fees to such deposit account.

Respectfully submitted,

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